

Power Supplies: International Opportunities for Major New Energy Savings

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What Is a Power Supply?

A circuit that converts 120 or 230 volt AC power into low voltage DC power

Two styles:

External



Internal



Two Technology Types

Linear

Switching



What the Labels Tell Us and What They Don't



Key Questions

- How many power supplies are out there?
- What does it mean for a power supply to be energy efficient?
- How important are active power losses compared to standby power losses?
- Is it cost effective to improve efficiency?
- How much difference would it make?
- How can we make it happen?

Estimated Power Supply Sales & Number in Use

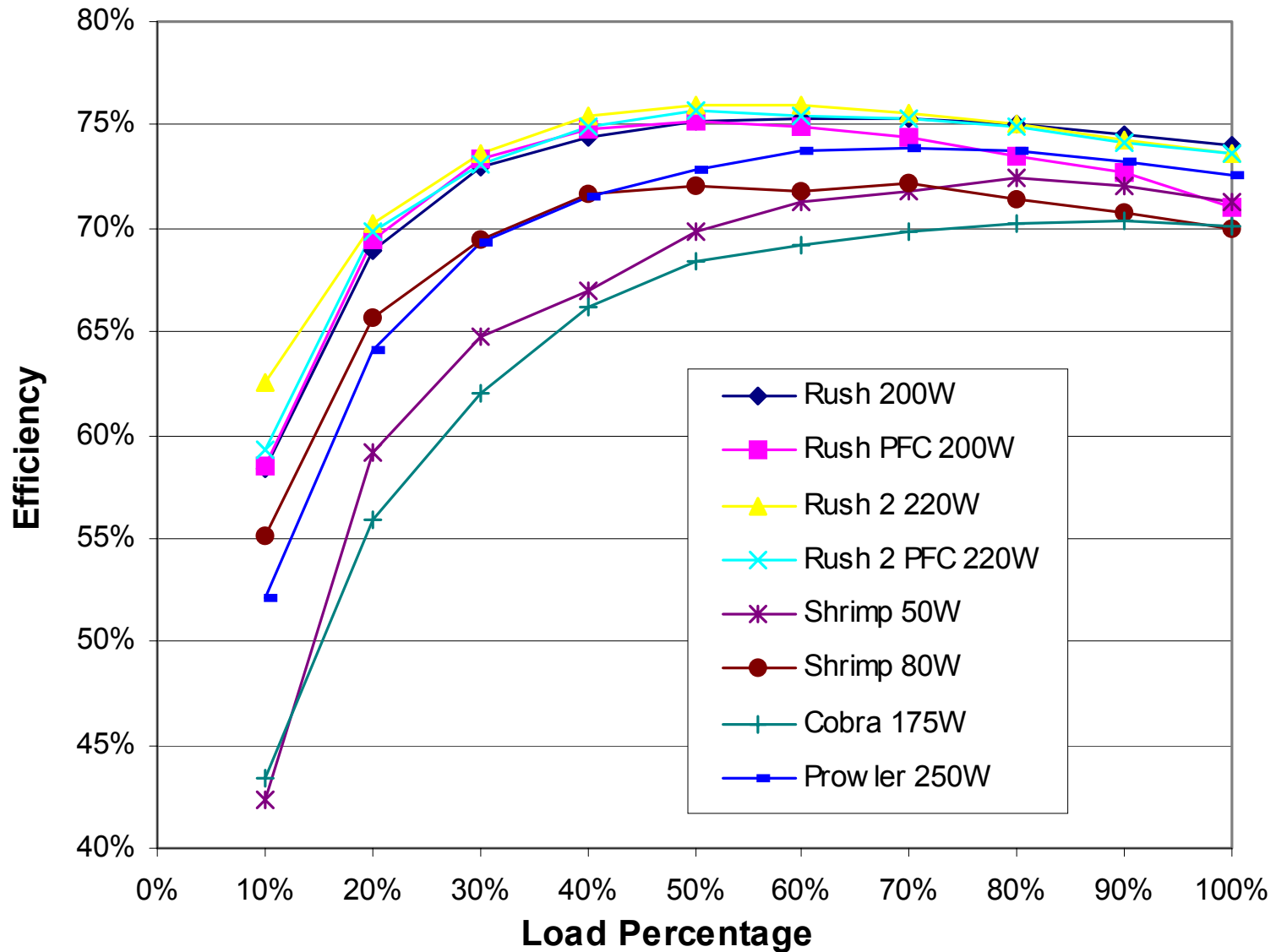
	North America		Global	
Power Supply Type	Unit Sales / Year	Total Units in Use	Unit Sales / Year	Total Units in Use
External	200 million	> 1.0 billion	0.6 to 0.8 billion	> 3 billion
Internal	> 250 million	> 1.5 billion	0.5 to 1.0 billion	> 3 billion
Total	> 450 million	> 2.5 billion	1.1 to 1.8 billion	> 6 billion

At least 8 power supplies in use per American

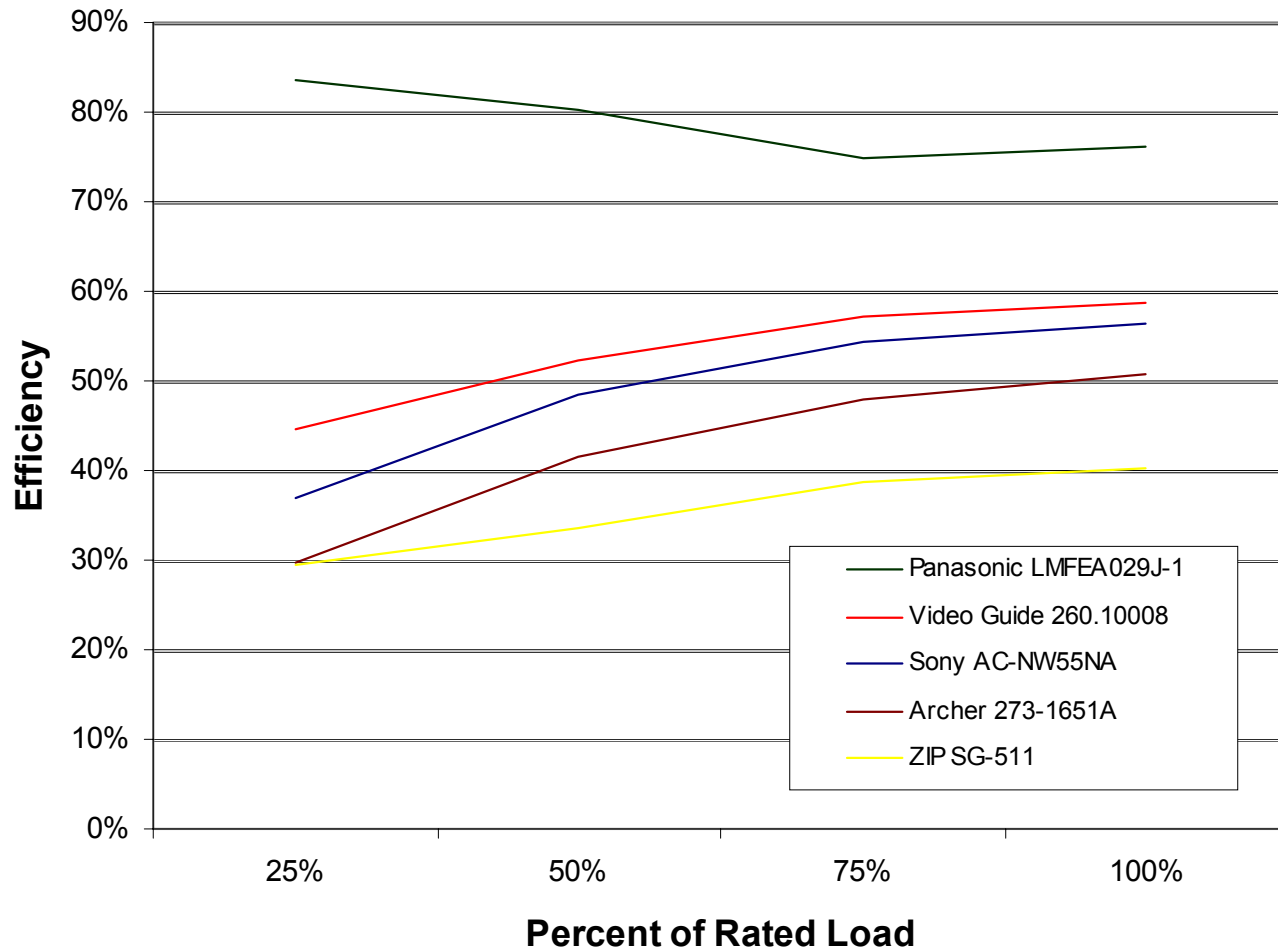
Nearly 1 per person worldwide

Sales growing by 15% / year

Computer Power Supply Efficiencies

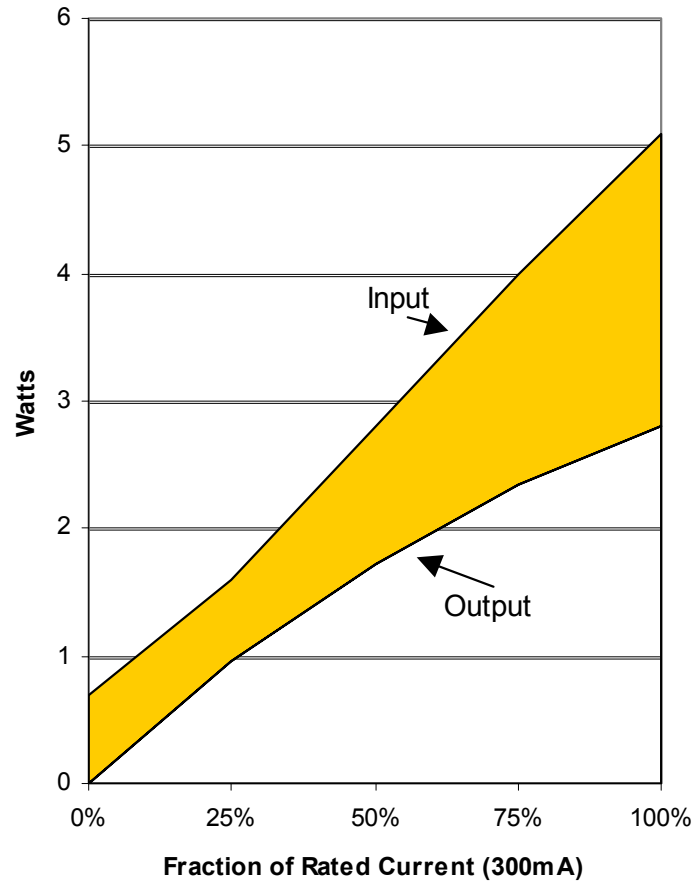


Efficiency Curves of 4-5 Watt Power Supplies

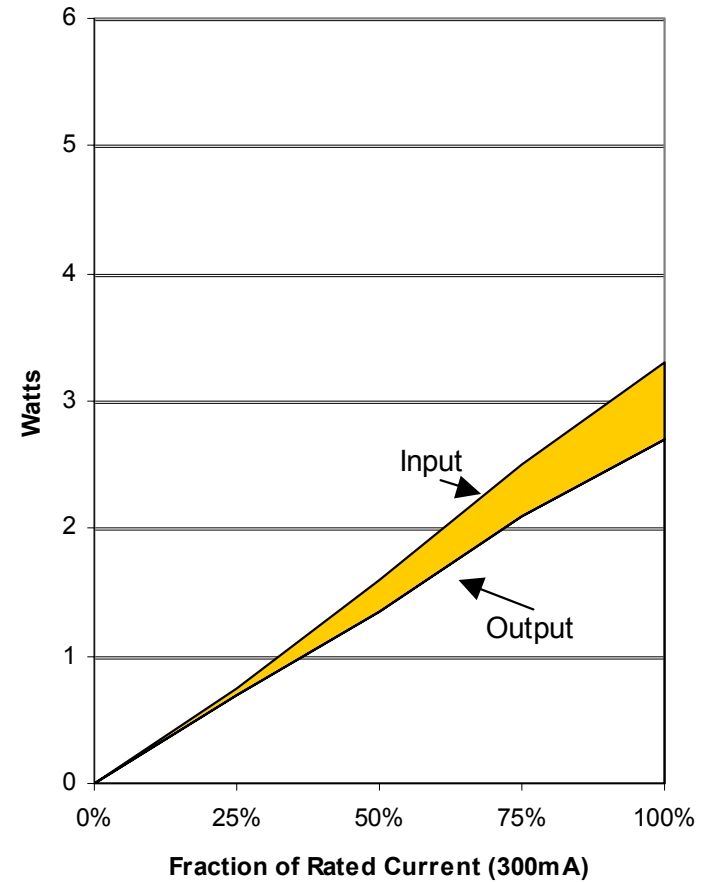


What the Measurements Tell Us...

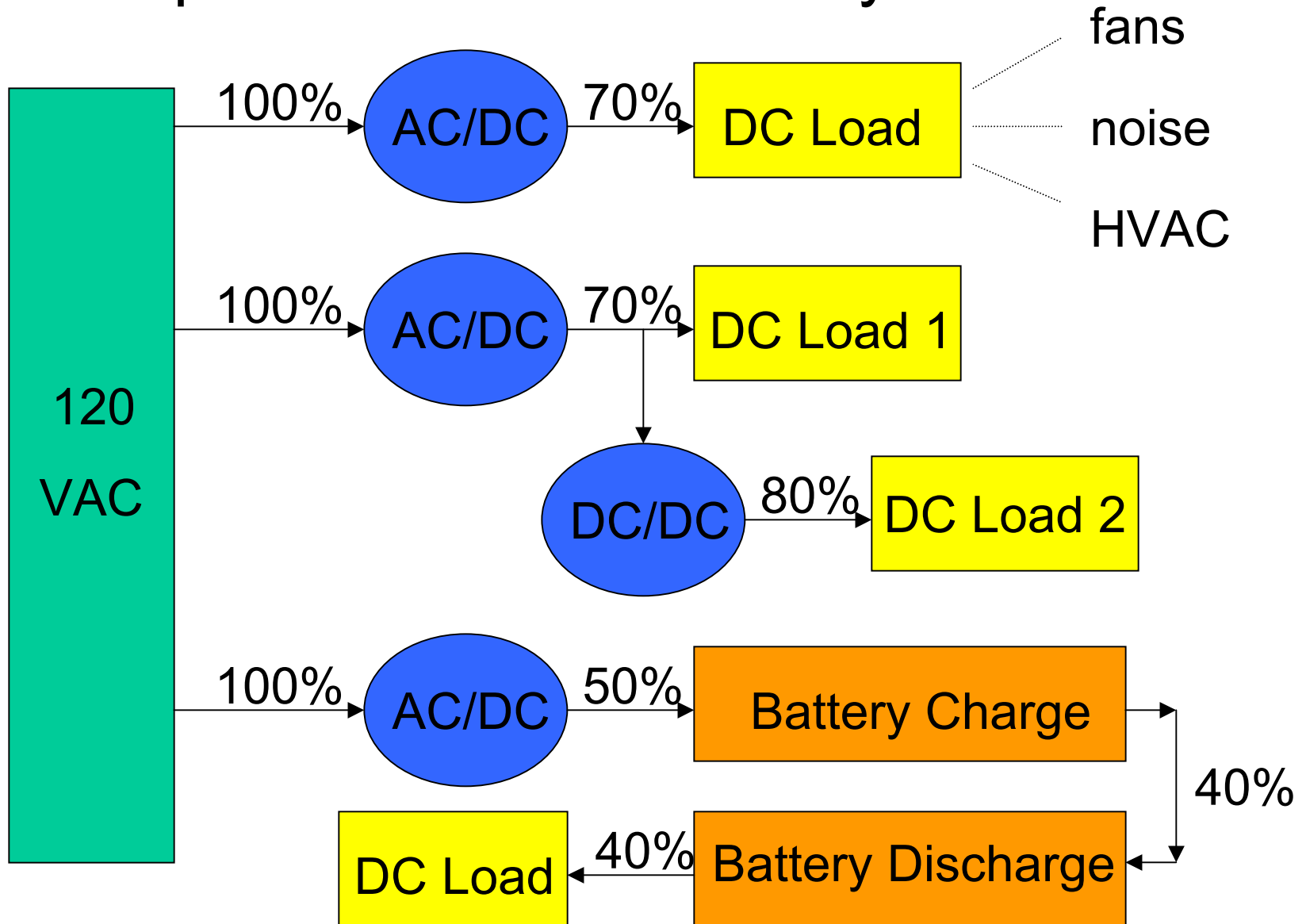
Power Consumed by a 9 Volt Linear Power Supply for a Cordless Phone



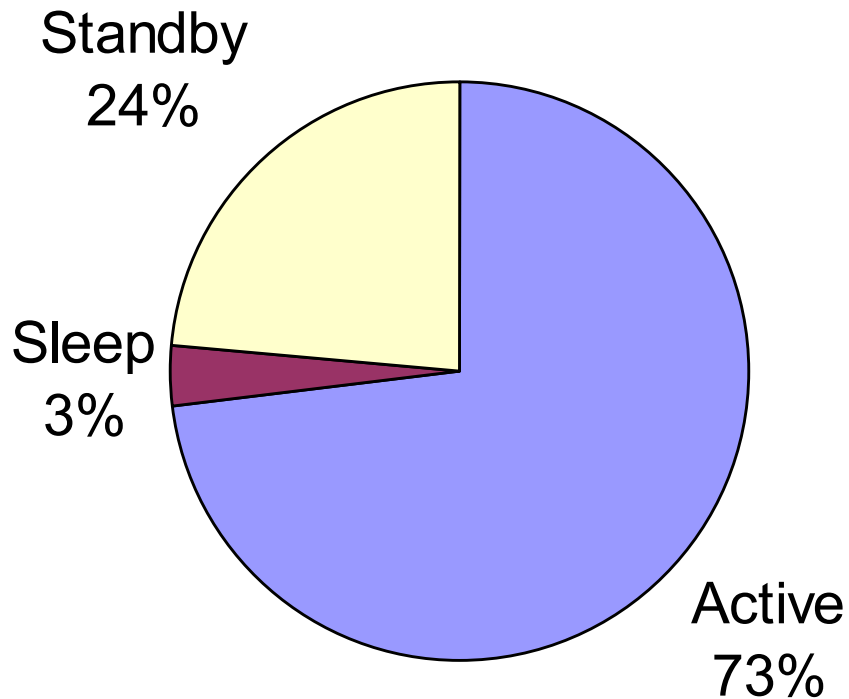
Power Consumed by a 9 Volt Switching Power Supply for a Cordless Phone



Multiple Places for Efficiency Loss



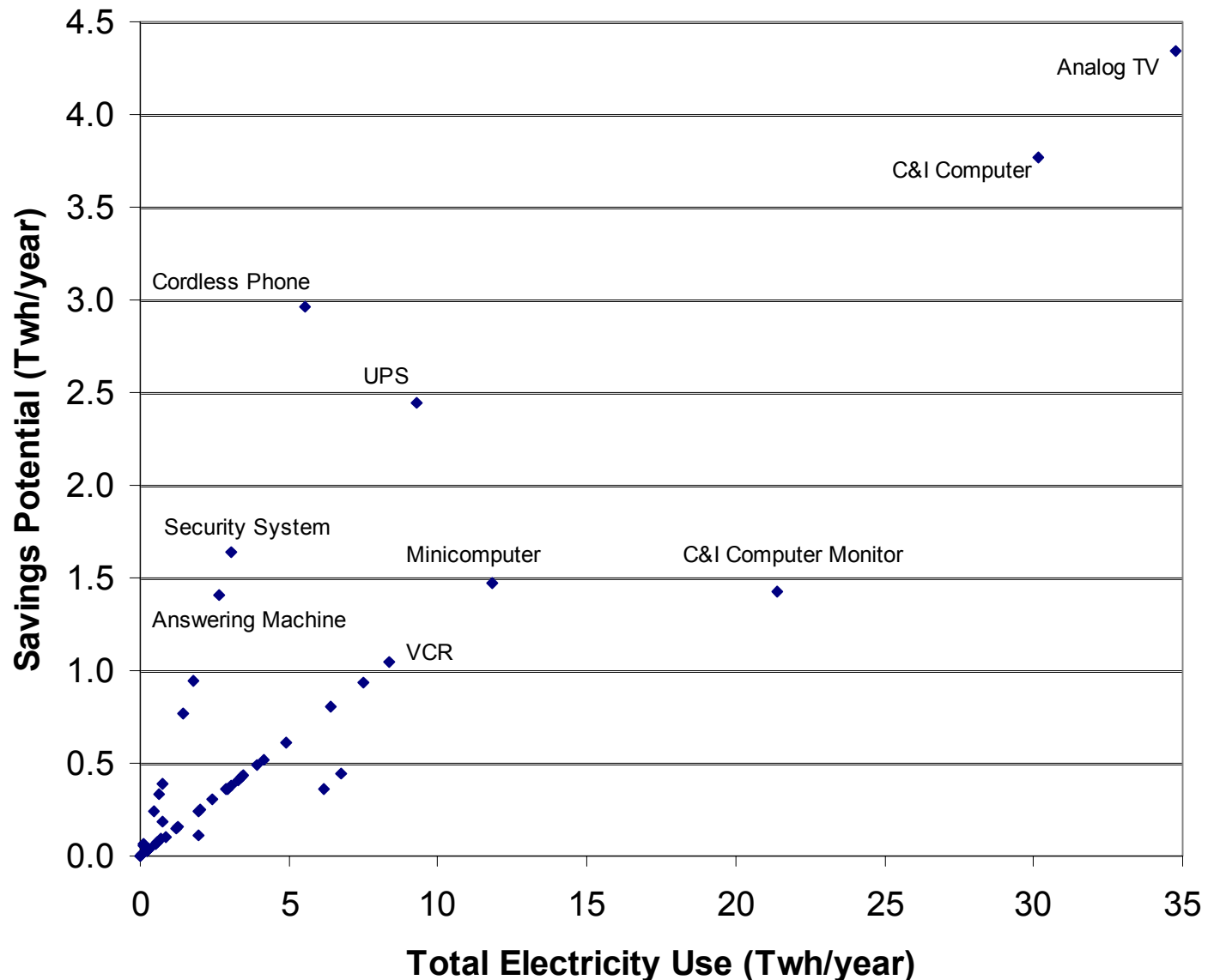
Total U.S. Electricity Flowing Through Power Supplies:
207 billion kwh/year, worth about \$17 billion/year
At least 6% of U.S. electricity use!



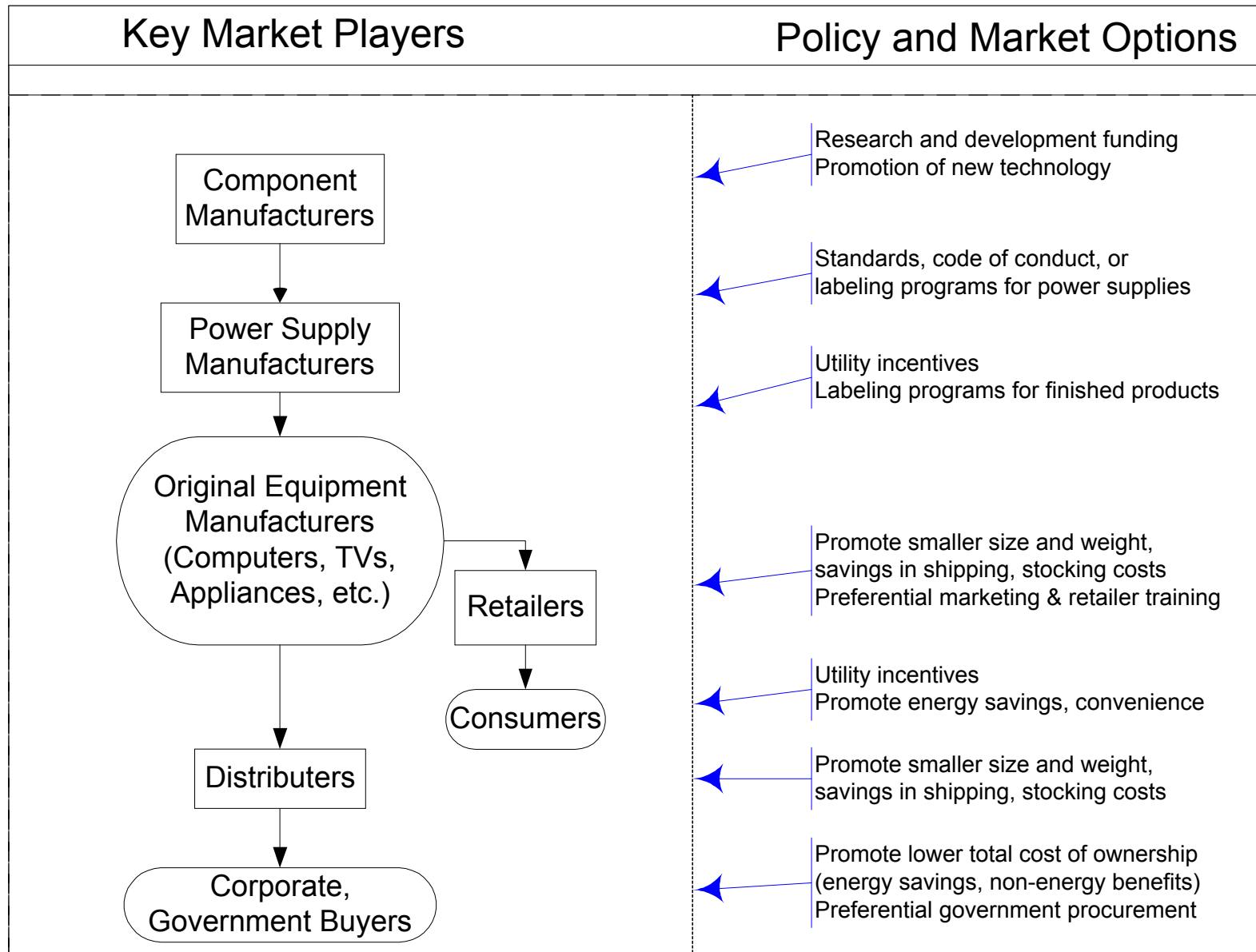
Savings Potential is Huge

- Improve linear power supply efficiency from 40% to >80%
- Improve switching power supply efficiency from 70% to >80%
- Annual savings would be more than 1% of total U.S. electricity use: about 32 billion kwh and more than \$2.5 billion in lower energy bills.
- Very cost effective – incremental costs often less than \$1 per power supply.
- Additional standby savings possible

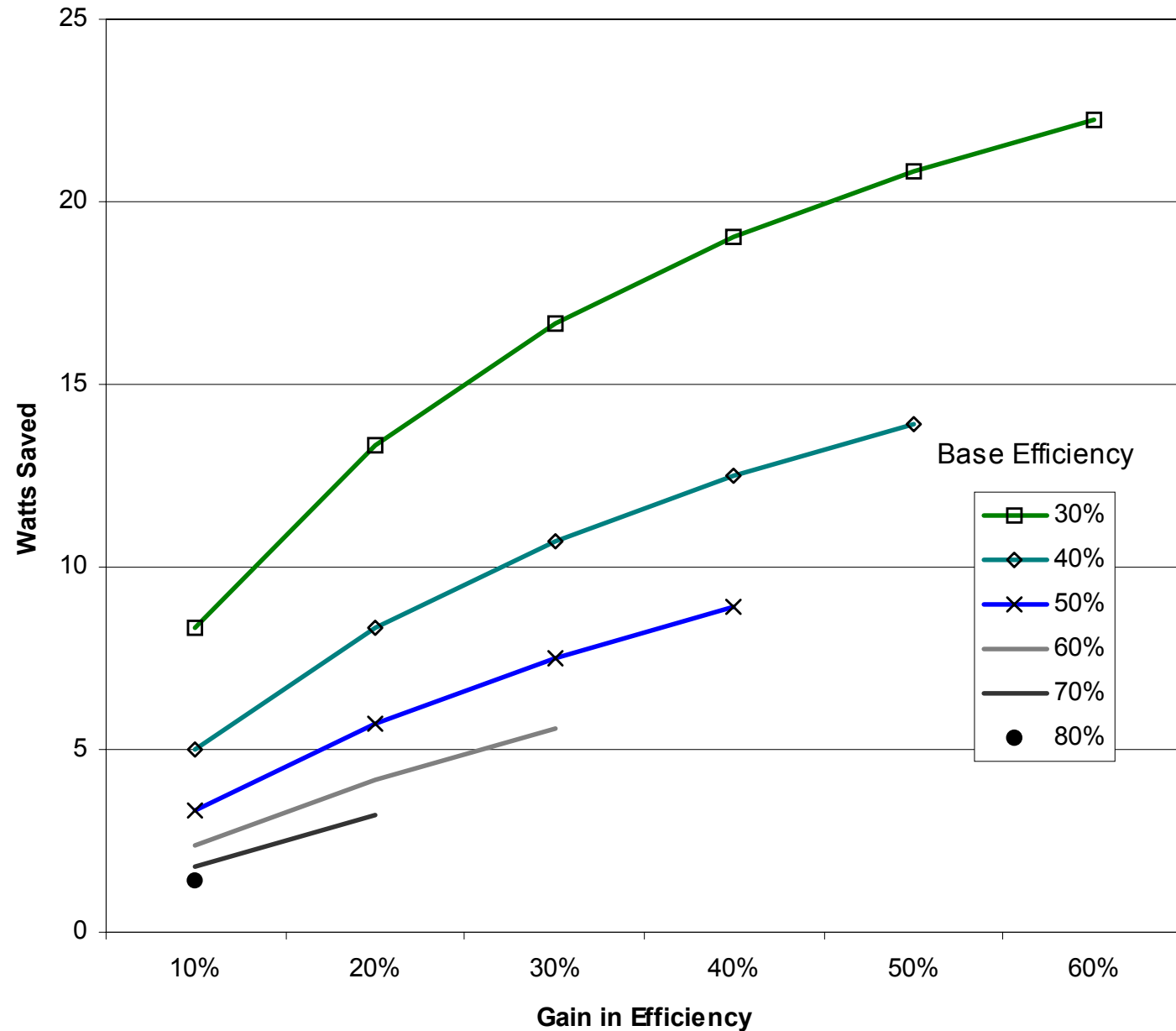
National Electricity Use and Savings Potential for Various Products Containing Power Supplies



Power Supply Market Snapshot



Watts Saved by Increasing the Efficiency of 10 Watt Power Supplies



Focus on Non-Energy Benefits!



Key Market Advantages for Highly Efficient Power Supplies

- Reduce travel weight & size
- Free up outlets / increase convenience
- More units per shipping container & more room for merchandise in store
- Already meets existing standby and pending active mode efficiency specs – future-proof!



Policy Recommendations

- Enact mandatory efficiency standards for external power supplies in the U.S., Europe, Asia, etc.
- Need international coordination (ie Code of Conduct) to accelerate the process
- Consider sleep, standby, and active efficiencies in Energy Star specifications for electronics (at least 13 product categories starting with monitors this year)
- Use federal, state, and private procurement to encourage sale of highly efficient designs
- Targeted utility incentives directed at OEMs or final assemblers